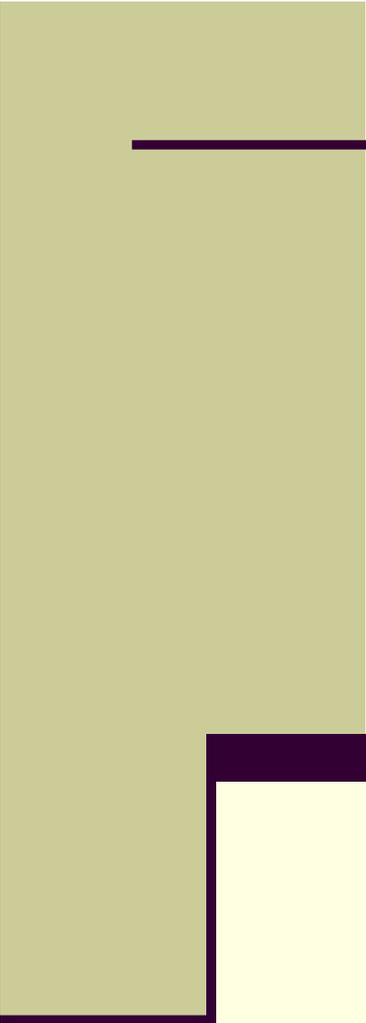




Emissions Inventory Slides



Ben Hancock
PTSD MSAB Analysis Section
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Statewide Ethanol Effect

2010 Statewide Cal 8-h Temps & Humidities					2010 Statewide Cal 8-h Temps & Humidities				
		Subarea MTBE	Subarea EtOH	Increase due to EtOH			Subarea MTBE	Subarea EtOH	Increase due to EtOH
All Gasoline					PC+T1+T2+T3+T4				
Vehicles	no	26,019,844			Vehicles	no	24,712,451		
VMT/1000	kmi/d	890,636			VMT/1000	kmi/d	872,198		
Trips	no/d	172,088,166			Trips	no/d	163,705,178		
Gasoline	kgal/d	51,653			Gasoline	kgal/d	50,469		
Diesel		0			Diesel				
Total Ex	tpd	302.3			Total Ex	tpd	244.3		
Diurnal	tpd	46.1	53.9	7.9	Diurnal	tpd	42.4	49.3	6.8
Resting	tpd	27.5	36.1	8.6	Resting	tpd	25.7	33.2	7.5
Running	tpd	140.2	142.8	2.7	Running	tpd	128.4	130.8	2.4
Hot Soak	tpd	43.9	45.8	1.9	Hot Soak	tpd	42.1	43.8	1.8
Total Evap	tpd	257.7	278.7	21.0	Total Evap	tpd	238.6	257.0	18.4
	g/d/veh	9.0	9.7	0.7		g/d/veh	8.8	9.4	0.7

Tech Group Breakdown

2010 Statewide Cal 8-h Temps & Humidities
PC+T1+T2+T3+T4

		Tech 1	Tech 2	Tech 3	Tech 4	Tech 5
HC Exh	tpd	39.8	18.8	14.4	88.0	83.3
CO	tpd	462.7	346.0	249.0	1357.6	1972.6
NOx	tpd	24.9	17.2	20.9	156.5	208.2
Diu/Rest	tpd	7.8	5.5	6.2	40.0	22.9
Hot Soak	tpd	4.3	1.7	2.7	20.4	14.8
Running	tpd	18.1	7.0	7.4	59.0	39.3
Population		271,898	221,956	388,162	3,882,237	19,948,282
VMT	kmi/d	4,721	4,459	8,493	99,073	755,450

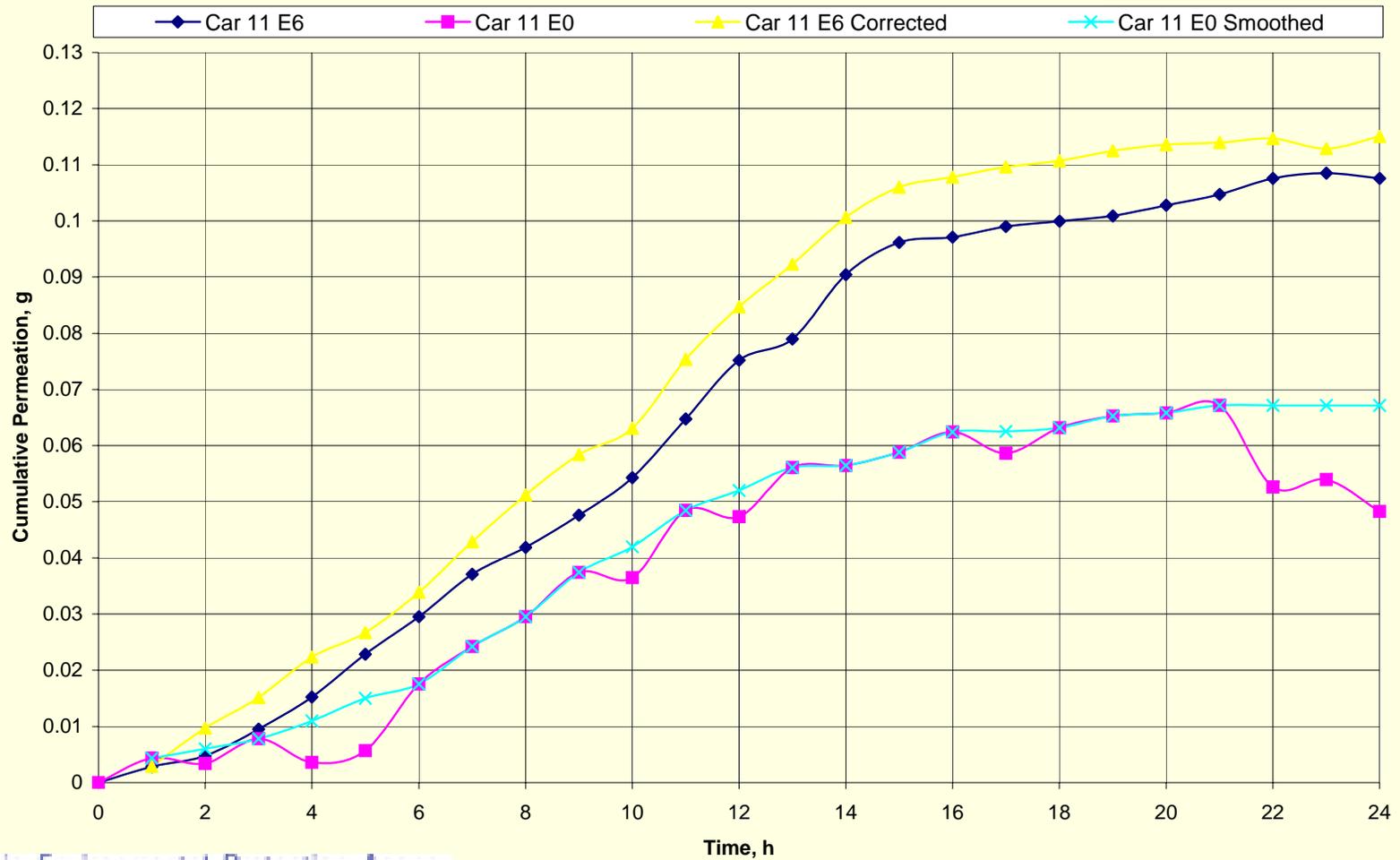
Raw SHED HC needs to be corrected for EtOH

- SHED mass data based on hourly FID readings
- FID has good behavior on hydrocarbons. Many species have less than unity response factors.
- Ethanol about 0.61 response factor. MTBE about 0.83 response factor
- With known gas chromatograph speciation can correct for this.
- Raw HC from SHED should be corrected up by about 30%

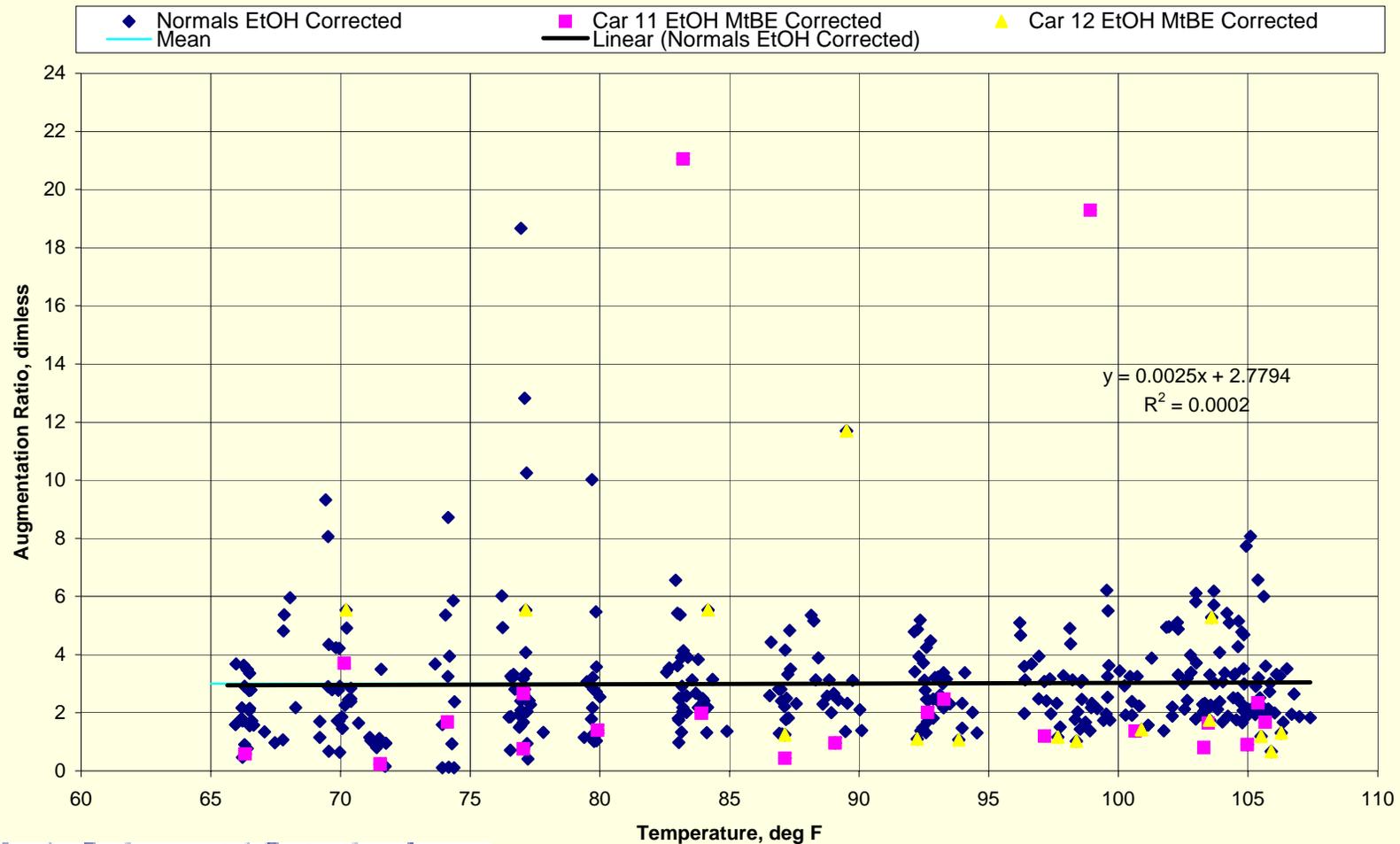
E65 & E65-3 EtOH Corrections

		0.61	Response on mols EtOH to C2			
		0.37	Response on grams			
	Vapor space	Raw	EtOH	NEHC	Corr T	Corr Fract
	wt% EtOH	Perm g/d	g/d	g/d	g/d	
Car 12	34.3	0.04	0.02	0.03	0.05	1.28
Car 11	15.8	0.10	0.02	0.09	0.11	1.11
Car 1	39.0	0.79	0.41	0.64	1.05	1.33
Car 2	29.6	1.18	0.43	1.02	1.45	1.23
Car 3	32.8	1.13	0.47	0.96	1.43	1.26
Car 4	33.4	1.78	0.75	1.50	2.25	1.27
Car 5	6.2	11.18	0.73	10.91	11.64	1.04
Car 6	13.4	4.48	0.66	4.24	4.90	1.09
Car 7	19.3	1.98	0.44	1.82	2.25	1.14
Car 8	51.7	1.83	1.40	1.31	2.71	1.48
Car 9	29.3	3.91	1.40	3.39	4.80	1.23
Car 10	18.0	3.39	0.69	3.14	3.83	1.13

E65-3 Car 11 Diurnals



FID Corrected Augmentation Ratios



E65, E65-3 Results, MTBE corrected

MY	MTBE g/d	EtOH g/d	Gasol g/d	Age y		delta g/d	ratio	MTBE corr	
2004	0.036	0.050	0.033	0		0.013	1.37	1.1	**
2004	0.053	0.113	0.048	1		0.061	2.15	1.1	**
2001	0.3	0.76	0.22	3		0.5	2.92	1.09	
2000	0.7	1.43	0.58	4		0.8	2.12	1.06	
1999	0.3	1.37	0.33	5		1.1	4.38	1.08	
1997	0.7	2.25	1.13	7		1.6	3.39	1.05	
1995	9.5	11.65	11.81	9		2.1	1.22	1.04	
1993 *	3.9	4.89	3.72	11		1.0	1.27	1.04	
1991	1.3	2.25	1.91	13		0.9	1.72	1.06	
1989	1.0	2.63	0.82	15		1.6	2.59	1.06	
1985	2.1	4.67	1.77	19		2.6	2.26	1.06	
1978	2.0	3.74	2.3	26		1.7	1.83	1.06	
	21.8	35.8	24.7	113	tot g/d	14.0	2.27	Arithmetic	
	1.8	3.0	2.1	9	g/d avg	1.2	1.64	Weighted	
	75.8	124.3	85.7		mg/h	48.5			
10 normals	8.3	19.3	9.1		tot g/d	10.8	2.47	Arithmetic	
	0.8	1.9	0.9		g/d avg	1.1	2.31	Weighted	
2 moderates	13.4	16.5	15.5		tot g/d	3.1	1.24	Arithmetic	
	6.7	8.3	7.8		g/d avg	1.6	1.23	Weighted	

Next Steps

- Augmentation Ratios from corrected data must be determined.
- This involves treatment of zero values and negative values of hourly diurnal emission rates
- To determine impact the augmentation ratio values should be hard programmed into EMFAC.

